WEIL-McLAIN GOLD GV

GOLD GV

Water Boiler — Series 4

User's Information Manual

WARNING If the information in this manual is not followed exactly, a fire or explosion may result, causing property damage, personal injury or loss of life.

Do not store or use **gasoline or other flammable vapors and liquids** in the vicinity of this or any other appliance.

WHAT TO DO IF YOU SMELL GAS

- **Do not try to light any appliance**.
- **Do not touch any electrical switch**; **do not use any phone** in your building.
- Immediately **call your gas supplier from a neighbor's phone**. Follow the gas supplier's instructions.
- **If you cannot reach your gas supplier, call the fire department**.

Installation and service must be performed by a qualified installer, service agency or the gas supplier.

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Part No. 550-141-866/1202

Please read this page first

Hazard definitions

The following defined terms are used throughout this manual to bring attention to the presence of hazards of various risk levels or to important information concerning the life of the product.

DANGER — Indicates presence of hazards that **will cause** severe personal injury, death or substantial property damage.

WARNING — Indicates presence of hazards that **can cause** severe personal injury, death or substantial property damage.

CAUTION — Indicates presence of hazards that **will or can cause** minor personal injury or property damage.

NOTICE — Indicates special instructions on installation, operation or maintenance that are important but not related to personal injury or property damage.

Boiler service and maintenance

The **User's Information Manual** provides information to the boiler owner/user for routine operation and maintenance and emergency shutdown. Detailed information on boiler installation, operation, start-up, service and parts is included in the **GV Boiler Manual**. The **GV Boiler Manual is intended only for use by a qualified service technician**.

How to use this manual . . .

To . . .	Read/use . . .	Pages . . .
Learn precautions	**Warnings and definitions**	**1, 2, and 3**
Prevent air contamination	**Laundry room or pool** — make sure boiler air is piped to boiler per manual. Read list of air contaminants you must avoid. **Have boiler air piped in if you can't avoid**.	**4**
Maintain boiler	Set up a **plan for maintaining the boiler** using the schedule included in this manual. Schedule an **annual start-up** by a qualified service technician before every heating season.	**5 – 9**
Locate boiler components	***How the boiler works*** and illustration.	**10 – 11**
Start — or — Shutdown boiler	Follow the **Lighting instruction** sheet details to start or shutdown your boiler.	**12 – 13**
Troubleshoot common problems	Use the common problems/solutions table to resolve typical heating system/boiler problems.	**14 – 15**

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STOP!! — Read before proceeding

WARNING

Failure to adhere to the guidelines on this page can result in severe personal injury, death or substantial property damage.

Boiler service and maintenance —

- To avoid electric shock, **disconnect electrical supply** before performing maintenance.
- To avoid severe burns, **allow boiler to cool** before performing maintenance.
- You must **maintain** the boiler as outlined in the manual and have the boiler **started up and serviced at least annually by a qualified service technician** to ensure boiler/system reliability.

Boiler operation —

- Do not block flow of combustion or ventilation **air** to boiler. This boiler is equipped with a control which will automatically shut down the boiler should air or vent be blocked. If vent or air blockage is easily accessible and removable, remove it. The boiler should attempt to restart within an hour. If blockage is not obvious or cannot be removed, have the boiler and system checked by a qualified service technician.
- Should **overheating** occur **or gas supply fail to shut off**, do not turn off or disconnect electrical supply to pump. Instead, **shut off the gas supply** at a location **external to the appliance**.
- **Do not use this boiler if any part has been under water**. Immediately call a qualified service technician to inspect the boiler and to replace any part of the control system and any gas control, which has been under water.

Boiler water —

- DO NOT use **petroleum-based** cleaning or sealing compounds in boiler system. Water seal deterioration will occur, causing leakage between sections and damage to heating system components. This can result in substantial property damage.
- DO NOT use "**homemade cures**" or "**boiler patent medicines**". Serious damage to boiler, personnel and/or property may result.
- Continual fresh **makeup water will reduce boiler life**. Mineral build-up in sections reduces heat transfer, overheats cast iron, and causes section failure. Addition of oxygen and other gases can cause internal corrosion. Leaks in boiler or piping must be repaired at once to prevent makeup water.
- **Do not add cold water to hot boiler**. Thermal shock can cause sections to crack.

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Prevent combustion air contamination —

Air contamination

Common household and hobby products often contain fluorine or chlorine compounds. When these chemicals pass through the boiler, they can form strong acids in the vent system or boiler. The acid can eat through the vent or boiler wall, causing serious damage and presenting a possible threat of flue gas spillage into the building.

Please read the information below. If the contaminating chemicals will be present, have your installer pipe the boiler air from outside per the Boiler manual.

WARNING

If the boiler is installed in **any area likely to cause contamination**, or if products which would contaminate the air cannot be removed, you must **pipe combustion air to the boiler** air intake. Contaminated combustion air will damage the boiler and vent system, resulting in possible severe personal injury, death or substantial property damage.

Do not operate a GV boiler in a laundry room or pool facility, for example, without using ducted outside air. These areas will always contain contaminants.

Products to avoid	Areas likely to have contaminants
Spray cans containing chloro/fluorocarbons	Dry cleaning/laundry areas and establishments
Permanent wave solutions	Swimming pools
Chlorinated waxes/cleaners	Metal fabrication plants
Chlorine-based swimming pool chemicals	Beauty shops
Calcium chloride used for thawing	Refrigeration repair shops
Sodium chloride used for water softening	Photo processing plants
Refrigerant leaks	Auto body shops
Paint or varnish removers	Plastic manufacturing plants
Hydrochloric acid/muriatic acid	Furniture refinishing areas and establishments
Cements and glues	New building construction
Antistatic fabric softeners used in clothes dryers	Remodeling areas
Chlorine-type bleaches, detergents, and cleaning solvents found in household laundry rooms	Garages with workshops
Adhesives used to fasten building products and other similar products	

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Perform maintenance per schedule below

Service technician (see following pages for instructions)	Owner maintenance (see following pages for instructions)	
ANNUAL START-UP **Inspect:** • Any problems reported by owner • Boiler area • Air openings • Flue gas vent • Boiler heating surfaces • Water piping • Condensate drain system **Service:** • Lubricate blower motor • Lubricate any circulators requiring oil **Start-up:** • Perform start-up per manual **Check/test:** • Check gas piping for leaks • Check cold fill & operating pressures • Check temperature mixing system • Check/maintain components - vents, limits, expansion tank, gauges, igniter • Inspect & operate relief valve **Review:** • Review maintenance procedures with owner	**Daily**	• Check boiler area • Check air openings • Check pressure gauge
	Monthly	• Check boiler interior piping • Check venting system • Check air vents • Check condensate drain system • Check relief valve
	Periodically	• Test low water cutoff (if used) • Clean vent termination/air intake screens
	Every 6 months	• Oil blower motor • Operate relief valve
	End of season	• Shut down procedure

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User maintenance procedures

Boiler must be serviced and maintained

WARNING

The boiler should be inspected and started annually, at the beginning of the heating season, only by a qualified service technician. In addition, the maintenance and care of the boiler designated on page 5 and explained on the following pages must be performed to assure maximum boiler efficiency and reliability. Failure to service and maintain the boiler and system could result in equipment failure, causing possible severe personal injury, death or substantial property damage.

NOTICE

The following information provides detailed instructions for completing the maintenance items listed in the maintenance schedule, page 5. In addition to this maintenance, the boiler must be serviced and started up at the beginning of each heating season by a qualified service technician.

—— DAILY ——

Check boiler area

WARNING

To prevent potential of severe personal injury, death or substantial property damage, eliminate all materials discussed below from the boiler vicinity. If contaminants are found:

Remove products immediately from the area. If they have been there for an extended period, call a qualified service technician to inspect the boiler and vent system for possible damage from acid corrosion.

If products cannot be removed, immediately call a qualified service technician to install an outside combustion air source for the boiler (if not already installed).

1. Combustible/flammable materials — Do not store combustible materials, gasoline or any other flammable vapors or liquids near the boiler. Remove immediately if found.
2. Air contaminants — Products containing chlorine or fluorine, if allowed to contaminate the boiler intake air, will cause acidic condensate in the vent and boiler. This will cause significant damage to the vent and/or boiler if allowed to continue. Read the list of potential materials listed on page 4 of this manual. If any of these products are in the room from which the boiler takes its combustion air, they must be removed immediately or the boiler combustion air must be supplied from outside. See WARNING above.

Check air openings

1. Verify that combustion and ventilation air openings to the boiler room and/or building are open and unobstructed.
2. Verify that boiler vent discharge and air intake are clean and free of obstructions. Remove any debris on the air intake or flue exhaust openings.

Check boiler pressure/temperature gauge

1. Make sure the pressure reading on the boiler pressure/temperature gauge does not exceed 24 psig. Higher pressure may indicate a problem with the expansion tank.

   Contact a qualified service technician if problem persists.

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User maintenance procedures (cont.)

— MONTHLY —

Check boiler interior piping

1. Remove boiler jacket top.
2. Visually inspect for leaks around internal piping, circulators, relief valve and other fittings. Immediately call a qualified service technician to repair any leaks.

WARNING Have leaks fixed at once by a qualifed service technician. Continual fresh makeup water will reduce boiler life. Minerals can build up in sections, reducing heat transfer, overheating cast iron, and causing section failure.

WARNING Do not use **petroleum-based cleaning or sealing compounds** in boiler system. Severe damage to boiler and system components can occur, resulting in possible severe personal injury, death or substantial property damage.

Check venting system

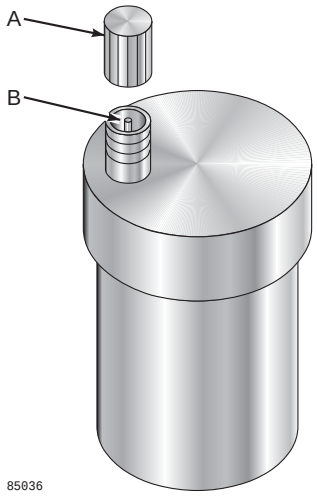
1. Visually inspect the flue gas vent piping for any signs of blockage, leakage or deterioration of the piping. Notify your qualified service technician at once if you find any problem.

WARNING Failure to inspect the vent system as noted above and have them repaired by a qualifed service technician can result in vent system failure, causing severe personal injury or death.

Check automatic air vents (if used — use automatic air vents with diaghragm-type expansion tanks only)

1. See Figure 1.
2. Remove the cap from any automatic air vent in the system and check operation by depressing valve "B" slightly with the tip of a screwdriver.
3. If the air vent valve appears to be working freely and not leaking, replace cap "A", twisting all the way on.
4. Loosen cap "A" one turn to allow vent to operate.
5. Have vent replaced if it does not operate correctly.

Figure 1 Automatic air vent



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User maintenance procedures (cont.)

— MONTHLY —

Check condensate drain system

1. While the boiler is running check the discharge end of the condensate drain tubing.
2. Make sure no flue gas is escaping from the condensate drain tubing by holding your fingers in front of the tubing discharge.
3. If you do notice flue gas escaping from the drain tubing, this indicates a dry drain trap. Call your qualified service technician to install a Weil-McLain condensate drain line check valve kit.

CAUTION Under some circumstances a GV vent system may not produce enough condensate to keep the condensate trap full of liquid. If the trap is not full, small amounts of flue products can be emitted into the boiler room through the condensate drain line. Contact a qualified service technician to install a Weil-McLain condensate drain line check valve kit.

4. Verify that the condensate drain tubing is unobstructed by squeezing it. Check the entire length of the condensate drain tubing, including the corrugated tube between the boiler vent outlet tee and the boiler jacket side.

Check boiler relief valve

1. Inspect the boiler relief valve and the relief valve discharge pipe for signs of weeping or leakage.
2. If the relief valve often weeps, the expansion tank may not be working properly. Immediately contact your qualified service technician to inspect the boiler and system.

PERIODICALLY

Test low water cutoff (if installed)

1. If the system is equipped with a low water cutoff, test the low water cutoff periodically during the heating season, following the low water cutoff manufacturer's instructions.

Clean vent termination & air intake screens

1. Remove all lint and debris from both the boiler air intake screen and the flue discharge screen.
2. The boiler control module will sense blockage of the air intake or flue and lockout if the blockage is excessive. It will signal the failure by flashing the appropriate indicator lights on the control board.
3. If removing the debris does not allow the boiler to operate correctly afterwards, contact your qualifed service technician to inspect the boiler and vent/air systems.

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User maintenance procedures (cont.)

EVERY 6 MONTHS

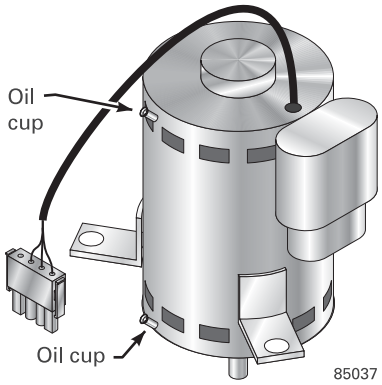
Oil blower motor

1. Remove the jacket top panel to access the blower motor.
2. Use only S.A.E. 20 motor oil. DO NOT use household universal oils.

WARNING Use only S.A.E. 20 motor oil to lubricate the blower motor. Do not use common universal household oils.

3. See Figure 2.
4. Place a few drops of oil in each of the two oiler cups on the side of the blower motor.

Figure 2 Blower motor



Operate boiler relief valve

1. Before proceeding, verify that the relief valve outlet has been piped to a safe place of discharge, avoiding any possibility of scalding from hot water.

WARNING To avoid water damage or scalding due to valve operation, a metal discharge line must be connected to relief valve outlet and run to a safe place of disposal. This discharge line must be installed by a qualifed heating installer or service technician in accordance with the instructions in the **GV Boiler Manual**. The discharge line must be terminated so as to eliminate possibility of severe burns should the valve discharge.

2. Read the boiler pressure/temperature gauge to make sure the system is pressurized.
3. Lift the relief valve top lever slightly, allowing water to relieve through the valve and discharge piping.
4. If water flows freely, release the lever and allow the valve to seat. Watch the end of the relief valve discharge pipe to ensure that the valve does not weep after the line has had time to drain. If the valve weeps, lift the seat again to attempt to clean the valve seat. If the valve continues to weep afterwards, contact your qualified service technician to inspect the valve and system.
5. If water does not flow from the valve when you lift the lever completely, the valve or discharge line may be blocked. Immediately shutdown the boiler, following the lighting instructions on the inside jacket top. Call your qualified service technician to inspect the boiler and system.

END OF SEASON

Follow boiler shutdown procedure

1. Follow "**TO TURN OFF GAS TO APPLIANCE**" on the **Lighting instruction** on the inside of the jacket top panel. You will also find these instructions on page 12 of this manual.
2. Do not drain system unless exposure to freezing temperatures will occur.
3. Do not drain the system if it is filled with an antifreeze solution.
4. Do not shut down boilers used for domestic water heating. They must operate year-round.

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How the boiler works . . .

① Control module

The GOLD Control Module (GCM) responds to signals from the room thermostat, air pressure switch, inlet water sensor and boiler limit circuit to operate the circulators, gas valve, igniter and blower. When a room thermostat calls for heat, the GCM starts the system circulator and blower.

The GCM runs the blower long enough to purge the boiler flue passages, then turns on the igniter and lets it warm up.

After a 15-second warmup, the GCM opens the gas valve, turns the igniter off, and checks for flame. The flame must come on within 4 seconds or the GCM will shut down and try the full cycle again.

When the room thermostat is satisfied, the GCM turns off the boiler components and waits for the next heat call.

The GCM indicator lights show normal sequence when the lights are on steady. When a problem occurs, the GCM flashes combinations of lights which indicate the most likely reason for the problem.

② Transformer

The control transformer reduces line voltage to 24 volts for the gas valve and limit circuit.

③ Blower

The blower pulls in air and mixes it with gas from the gas valve. The blower forces this mixture into the burner for combustion inside the boiler chamber.

④ Air pressure switch

The air pressure switch signals the control module, telling the control module whether air is moving through the blower.

⑤ Water temperature limit switch

The water temperature limit switch turns off the gas valve if the temperature in the boiler goes above its setting. (The circulators will continue to run as long as there is a call for heat.)

⑥ System circulator

The system circulator circulates water through the external (system) piping. The flow rate of the circulator is controlled by the GCM, depending on the temperature of the water entering the boiler sections. Pump must remain on boiler — do not remove.

⑦ Bypass circulator

The GCM operates the bypass circulator to mix hot water from the boiler outlet with colder return water from the system when needed to prevent condensation of flue gases in the boiler.

When the water returning to the boiler is below 140 °F, the GCM regulates the bypass circulator and system circulator flow rates to raise the water temperature up to 140 °F before it enters the boiler sections. By balancing these flow rates, the GCM can protect against condensation even if return water is as low as 60 °F.

Pump must remain on boiler — do not remove.

⑧ Water temperature sensor

The water temperature sensor monitors the temperature of the water entering the boiler sections. The sensor sends this information to the GCM, telling the GCM how much to adjust the circulator flow rates to provide at least 140 °F entering water.

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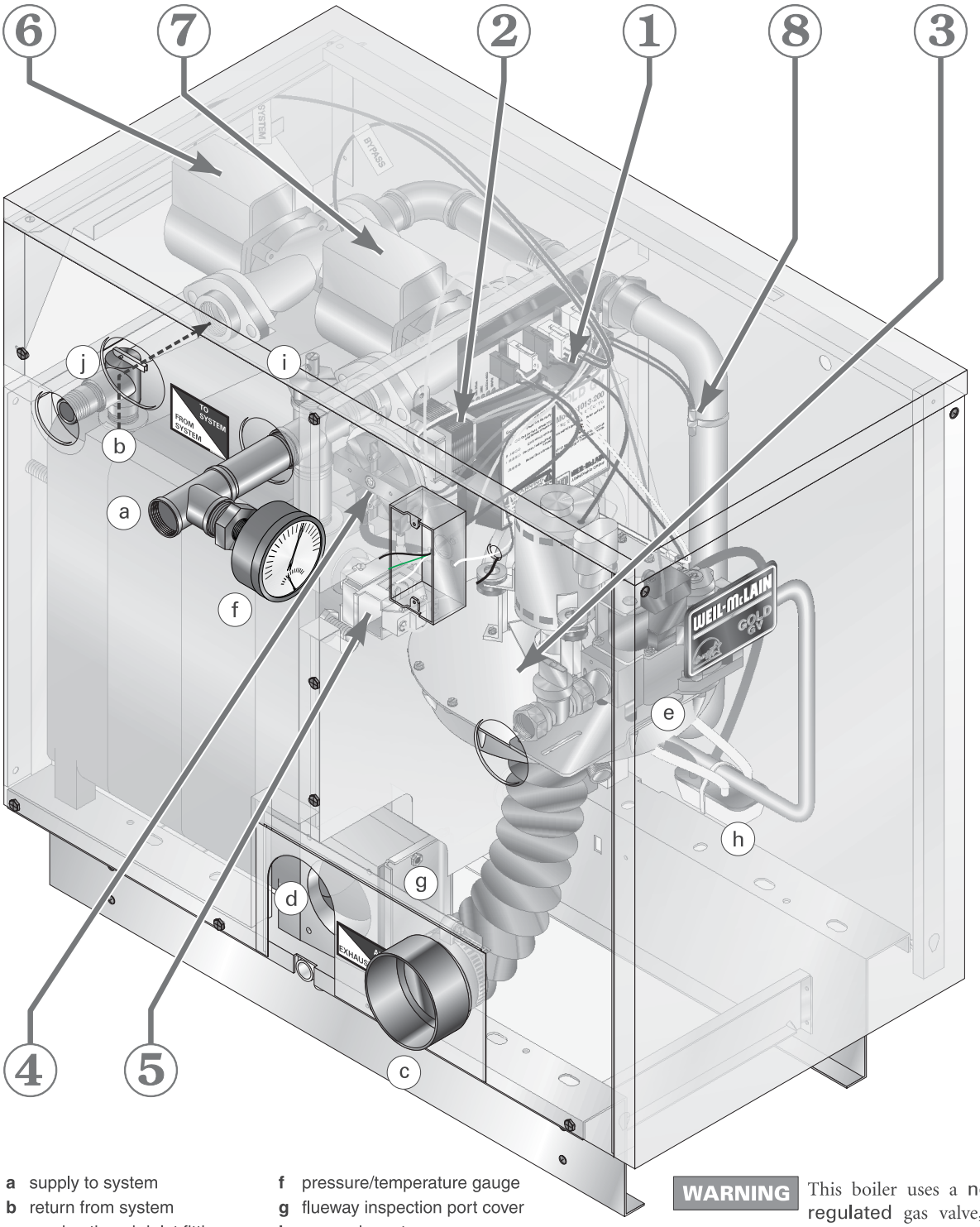
GOLD GV Water boiler — Series 4



a supply to system
b return from system
c combustion air inlet fitting
d flue outlet
e gas valve (see warning, right)
f pressure/temperature gauge
g flueway inspection port cover
h sensor hose trap
i manual air vent
j relief valve

85001

WARNING This boiler uses a negative-pressure-regulated gas valve, set for an outlet pressure approximately **–0.20"** w.c.. **DO NOT** set the outlet pressure higher than factory setting.

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Lighting instruction

WARNING Before attempting to start the boiler, **check the boiler pressure temperature gauge.** If boiler and system are full of water and properly pressurized, the gauge should read at least 12 psig on most systems. Operating the boiler without proper water content will damage boiler and controls and could result in severe personal injury, death or substantial property damage.

FOR YOUR SAFETY READ BEFORE OPERATING

WARNING If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

A. This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.

B. Before OPERATING, smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor. See below.

C. Use only your hand to rotate the handle on the gas cock. Never use tools. If the valve handle will not move by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.

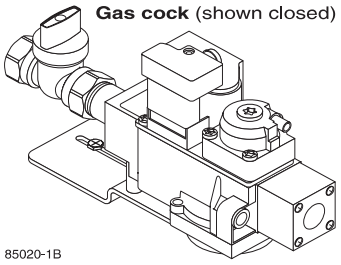
D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control, which has been under water.

WHAT TO DO IF YOU SMELL GAS

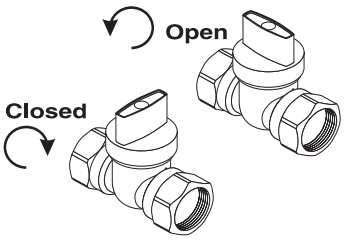
- Do not try to light any appliance.
- Do not touch any electric switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

OPERATING INSTRUCTIONS

1. **STOP**! Read the safety information above on this label.
2. Set the thermostat to lowest setting.
3. Turn off all electrical power to the appliance.
4. Remove jacket top panel.
5. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.
6. Rotate gas cock handle clockwise ↷ to close gas line (handle perpendicular to gas line — see drawing at right).
7. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, **STOP**! Follow "B" in the safety information above. If you don't smell gas, go to the next step.
8. Rotate gas cock handle counterclockwise ↶ to open gas line (handle lined up with gas line as in the drawing at right).
9. Turn on all electric power to the appliance.
10. Set thermostat to desired setting.
11. If the appliance will not operate, follow the instructions "**TO TURN OFF GAS TO APPLIANCE**" below and call your service technician or gas supplier.
12. Replace jacket top panel.



Rotate gas cock counterclockwise to open. When open, rotate clockwise to close. (See below.)



TO TURN OFF GAS TO THE APPLIANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. Remove jacket top panel.
4. Rotate gas cock handle clockwise ↷ until handle is perpendicular to gas line (see drawing above, right) to close valve.
5. Replace jacket top panel.

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Common problems and solutions

Symptom	Common Causes	Possible Corrections
Rapid cycling — boiler turns on and off frequently	Thermostat installed where drafts or heat affect reading	Locate thermostat on inner wall away from heat sources or cool drafts.
	Heat anticipator in thermostat adjusted incorrectly	Adjust thermostat per manufacturer's instructions.
	Incorrect limit setting	Set limit according to system needs. Maximum setting is 220˚F. Increase limit setting to decrease cycling.
	Insufficient water flow through boiler	Check all valves to and from boiler. Return to proper setting.
		Confirm circulator size.
Frequent release of water through relief valve	Expansion tank sized too small	Call qualified service technician to check expansion tank operation and size.
	Flooded expansion tank	Call qualified service technician to check expansion tank operation.
	Inoperative limit control	Call qualified service technician to replace limit control.
Need to frequently add makeup water	Leaks in boiler or piping	Have qualified service technician repair leaks at once to avoid constant use of makeup water. Makeup water can cause mineral deposits which, in turn, can cause boiler section failure. Do not use petroleum-base stop-leak compounds.
Black water condition	Oxygen corrosion due to leaks in boiler and piping	Have qualified service technician repair at once. Keep pH of water between 7.0 to 8.5.

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Common problems and solutions (continued)

Symptom	Common Causes	Possible Corrections
Popping or percolating noise heard in boiler	Mineral deposits in sections due to constant use of makeup water	Call qualified service technician to de-lime boiler, if necessary. In some cases, deposits will be too heavy to remove with de-liming procedures.
		Have qualified service technician repair leaks to eliminate need for constant makeup water.
	Incorrect pH of boiler water	Call qualified service technician to check pH level and correct. pH should be maintained between 7.0 to 8.5.
	Insufficient water flow through boiler	Check all valves to and from boiler. Return to proper setting.
		Confirm circulator size.
Metal flakes found in vent outlet or vent starter tee — flueway corrosion	Contaminated combustion air supply — See page 4 in this manual.	Remove any contaminating products. See page 4 in this manual.
		Provide outside air for combustion. Have qualified service technician pipe-up kit.
	Condensation of combustion gases in boiler sections	Have qualified service technician check operation of mixing system. Repair/replace if necessary.
Some radiators or baseboard units do not heat or are noisy	Air in system	Bleed air from system through air vents in radiators or baseboard units.
	Low system pressure	Fill to correct pressure.
		Check for leaks in boiler or piping. Have qualified service technician repair at once.
	High limit set too low	Adjust high limit to higher setting.

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